

Application Number 10/053,173
Responsive to Office Action mailed April 11, 2005

REMARKS

This Amendment is responsive to the Office Action dated April 11, 2005. Applicants have amended claims 7, 22, 23, 25 and 27 and canceled claims 8, 24, 26 and 28. Claims 7, 11-13, 16, 22, 23, 25 and 27 are now pending.

In the Office Action, the Examiner rejected claims 7, 8, 11-13, 16 and 23-27 under 35 U.S.C. 103(a) as being unpatentable over Gorczyca et al. (US Pat. Pub. No. 2002/0185759) in view of Van Hout et al. (US 6,238,197), and rejected claim 22 under 35 U.S.C. 103(a) as being unpatentable over Gorczyca in view of Van Hout and Inaba et al. (US 6,054,075).

Applicants respectfully traverse the rejections to the extent such rejections may be considered applicable to the amended claims. The applied references fail to disclose or suggest the inventions defined by Applicants' claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

In this Amendment, Applicants have amended all pending independent claims to recite the use of a ground strap that provides a substantially non-resistive electrical path (from either a mirror block or a stamper) to a grounded voltage. The use of a ground strap is not shown or suggested in any of the applied references. In particular, while Gorczyca may disclose the use of a static dissipating coating on a mirror block surface, Gorczyca clearly lacks any suggestion of the use of a ground strap to properly ground either a stamper or a mirror block of a mold. Moreover, there are several reasons why a person of ordinary skill in the art would not have neither recognized the desirability of a ground strap, nor implemented a ground strap in view of the teaching of Gorczyca. These reasons are addressed in greater detail below.

As amended, claim 7 recites a molding tool comprising a moving side comprising a first mirror block, a non-moving side comprising a second mirror block, a stamper and an air interface between the second mirror block and the stamper, and a ground strap attached to the first mirror block of the moving side, the ground strap providing a substantially non-resistive electrical path from the first mirror block to a grounded voltage. Claim 22 recites similar features in a molding system that further includes a control unit coupled to the molding tool to control a molding process of the molding tool, and a robotic arm coupled to the control unit for receiving molded components from the molding tool.

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Claim 23 recites a molding tool comprising a moving side comprising a first mirror block, a first stamper and a first air interface between the first mirror block and the first stamper, a non-moving side comprising a second mirror block, a second stamper and a second air interface between the second mirror block and the second stamper, a first ground strap attached to the first stamper of the moving side, the first ground strap providing a substantially non-resistive electrical path from the first stamper to a grounded voltage, and a second ground strap attached to the second stamper of the non-moving side, the second ground strap providing a substantially non-resistive electrical path from the second stamper to the grounded voltage.

Claim 25 recites a molding tool comprising a moving side comprising a first mirror block, a first stamper and a first air interface between the first mirror block and the first stamper, a non-moving side comprising a second mirror block, a second stamper and a second air interface between the second mirror block and the second stamper, a first ground strap to provide a first substantially non-resistive electrical path from the first mirror block to a grounded voltage, and a second ground strap to provide a second substantially non-resistive electrical path from the second mirror block to the grounded voltage.

Claim 27 recites a molding tool comprising a moving side comprising a first mirror block, a non-moving side comprising a second mirror block, a stamper and an air interface between the second mirror block and the stamper, and a ground strap coupled to the stamper of the non-moving side to provide a substantially non-resistive electrical path from the stamper to a grounded voltage.

In the Office Action, the Examiner recognized that none of the applied references discloses or suggests the use of a ground strap, either to ground a mirror block or to ground a stamper. However, the Examiner argued that Gorczyca recognizes problems associated with static charge buildup. The Examiner noted that Gorczyca teaches the use of a coating of static charge dissipating material on the mirror block in order to allow static charge flow to a "neutral surface," but also noted that Gorczyca lacks any suggestion of a ground strap. Based solely on the teaching in Gorczyca regarding the dissipation of static charge using coating of static charge dissipating material, the Examiner concluded that the use of a ground strap would have been obvious to a person of ordinary skill in the art.

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Applicants disagree with the Examiner's obviousness conclusion. There are at least two fundamental reasons why the teaching of Gorczyca would not have led a person of ordinary skill in the art to couple a ground strap to either a stamper or a mirror block.

First, Gorczyca would not have led a person of ordinary skill in the art to use a ground strap because the teaching of Gorczyca does not actually recognize that the grounding of the mirror block or the stamper is needed. In particular, unlike Applicants' patent application, Gorczyca identifies the issue of static charge as being a localized surface problem specifically related to the use of insulator coatings on the mirror blocks. In other words, for Gorczyca, static charge is a localized issue related to a mirror block surface relative to the mirror block, and not an issue with the mirror block itself lacking grounding. Unlike Applicants' patent application, the teaching of Gorczyca appears to presume that the mirror blocks are adequately grounded, when in fact the mirror blocks may lack sufficient grounding.

At least two passages of Gorczyca make it clear that Gorczyca addresses only the local surface area of a mirror block having an insulator coating, and not grounding of the mirror block itself. In paragraph [0030], for example, Gorczyca states that "if the managed heat transfer coating was inherently electrically conductive... the coating with an electrically conductive material would not be as beneficial. From this passage, according to Gorczyca, if the mirror block surface is conductive, static charge issues are addressed. Thus, based on the passage at paragraph [0030], it is clear that for Gorczyca, static charge is a localized issue related to a mirror block surface in relation to the mirror block, and not an issue related to grounding of the mirror block itself. Put another way, the teaching of Gorczyca regarding the use of a conductive mirror block surface to address localized static charge shows that Gorczyca fails to recognize that the mirror block itself may be inadequately grounded.

Also, in paragraph [0029], Gorczyca indicates that non-conductive managed heat transfer layers can make it difficult for charge to dissipate or flow to a "neutral surface." What Gorczyca views as the neutral surface, however, is the mirror block itself, insofar as nothing other than a conductive coating on the mirror block is discussed. Thus, Gorczyca does not contemplate grounding of the mirror block, as the mirror block is already viewed by Gorczyca as being the neutral surface. Instead, Gorczyca teaches the use of an electrically conductive managed heat

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transfer layer so that change does not become trapped on the mirror block (assuming the mirror block is grounded and "neutral").

Applicants also note that the Examiner's statement that: "Gorczyca implicitly discloses that the mold is connected to a ground (the "neutral site") to discharge the static charge" is an incorrect conclusory statement that is unsupported by the evidentiary record. The "neutral site" as identified by the Examiner appears to be the mirror block itself. However, the mirror blocks in Gorczyca are not necessarily grounded, particularly insofar as Gorczyca does not recognize the grounding issues discussed in Applicants' patent application. Indeed, nothing in Gorczyca discloses or suggests grounding of the mirror blocks. On the contrary, Gorczyca appears to incorrectly presume that such mirror blocks are grounded, without a ground strap. Of course, this may not be the case, as shown by Applicants' microscopic observations of artifacts that look similar to those of electric discharge matching (EDM) processes. See Applicants' Specification at page 7, lines 7-12. Without microscopic observation of mirror blocks that were used in numerous molding cycles and an appreciation of the EDM-like remnants that can manifest on such mirror blocks, a person with ordinary skill in the art would not appreciate the lack of adequate grounding of the mirror block.

The second reason why Gorczyca would not have led a person of ordinary skill in the art to couple a ground strap to either the mirror block or the stamper is because Gorczyca purports to have already addressed the issue of static charge dissipation, via a coating of conductive material. Thus, given the solution of Gorczyca to address the issue of static charge phenomena, it is unclear why a person of ordinary skill in the art would have been motivated to look any further.

On the contrary, a person of ordinary skill in the art would not have looked any further, and therefore, would not have found any reasons to couple a ground strap to either the mirror block or the stamper, as the Examiner's analysis would otherwise indicate. Gorczyca teaches that the issue of static charge dissipation can be remedied by providing a coating of conductive material. Therefore, after providing such a conductive coating as taught by Gorczyca, a person of ordinary skill in the art would have had no reason to look to a ground strap, as required by Applicants' claims. Applicants' patent application, unlike Gorczyca, appreciates that EDM-like remnants can manifest on mirror blocks after thousands of molding cycles if a ground strap is

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not implemented. This would appear to be the case even if the more localized static charge issues, identified by Gorczyca, were addressed by use of a conductive coating, as the conductive coating would make the surface of the mirror block neutral with respect to the mirror block, but would not address inadequate grounding of the mirror block itself.

As a final point, Applicants note that a ground strap attached to either a mirror block or a stamper is not the same as an electrically conductive coating on a mirror block as taught by Gorczyca. To be sure, even with the electrically conductive coating on a mirror block, the mirror block itself could remain improperly grounded. Indeed, Applicants were generally unaware of such improper grounding until an erosion pattern, viewed under a microscope, revealed similarities to metallic surfaces finished by EDM processes. See page 7, lines 7-12 of Applicants' Specification. For this reason, Applicants hypothesized that the static charge within the mold cavity was dissipating between the stamper and the mirror block causing sparks that would systematically erode the mirror block in a manner similar to EDM processes. *Id.*

The EDM phenomena identified by Applicants using microscopic inspection of mirror blocks are entirely different from the localized static charge problems of Gorczyca, which are said to increase the coefficients of friction and thus the abrasion seen in the molding machine. See paragraph [0029] of Gorczyca. Thus, the coating described by Gorczyca, even if electrically conductive, may be "neutral" with respect to the mirror block, but the mirror block and the coating might nevertheless remain ungrounded, and this would be a separate phenomenon, both unrecognized and unappreciated by Gorczyca. Therefore, a person of ordinary skill in the art, reading Gorczyca, would not have coupled a ground strap to either the mirror block or the stamper, nor recognize any advantages or reasons for doing so.

Neither Van Hout nor Inaba provides any teaching that would have led a person of ordinary skill in the art to modify the mold of Gorczyca to implement a ground strap. In any case, since neither the Van Hout nor Inaba references were cited by the Examiner for teachings unrelated to static charge dissipation or grounding, Applicants reserve further comment on these references at this time.

In view of the comments above and the amendments to the claims, all claims in this application should now be in condition for allowance. Applicants respectfully request reconsideration and prompt allowance of all pending claims. Please charge any additional fees or

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credit any overpayment to deposit account number 09-0069. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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